

Appl. No. 09/882,534

In the Claims

Claims 32-56 are pending in the application with claims 32, 33, 36, 37, 40, 41, 45, 46, and 50-52 amended herein.

Claims 1-31 (cancelled)

32. (withdrawn--currently amended) A capacitor construction comprising a first capacitor electrode over a substrate, a capacitor dielectric layer over the first electrode, a second capacitor electrode over the dielectric layer, and an atomic layer deposited insulative barrier layer to oxygen diffusion between the first electrode and the dielectric layer and/or between the dielectric layer and the second electrode, the barrier layer having a thickness of less than 10 Angstroms and the dielectric layer and/or the second electrode comprising oxygen that is diffusable into the first electrode absent the barrier layer.

33. (withdrawn--currently amended) The construction of claim 32 wherein the second capacitor electrode comprises RuO_x ~~barrier layer has a thickness of less than about 12 Angstroms.~~

34. (withdrawn) The construction of claim 32 wherein the barrier layer comprises Al₂O₃.

35. (withdrawn) The construction of claim 32 wherein the barrier layer exhibits a K factor of greater than about 7 at 20° C.

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36. (currently amended) A capacitor construction comprising:
a first capacitor electrode over a substrate;
an insulative barrier layer to oxygen diffusion over the first electrode,
the barrier layer comprising a chemisorption product of first and second
substantially saturated precursor monolayers and having a thickness of less
than 10 Angstroms;
a capacitor dielectric layer over the barrier layer or between the first
electrode and the barrier layer; and
a second capacitor electrode over the dielectric layer and the barrier
layer, the dielectric layer and/or the second electrode comprising oxygen that
is diffusable into the first electrode absent the barrier layer.

37. (currently amended) The construction of claim 36 wherein the
second capacitor electrode comprises RuO_x ~~barrier layer has a thickness of
less than about 12 Angstroms.~~

38. (previously presented) The construction of claim 36 wherein the
barrier layer comprises Al₂O₃.

39. (previously presented) The construction of claim 36 wherein the
barrier layer exhibits a K factor of greater than about 7 at 20° C.

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40. (withdrawn--currently amended) A memory array comprising:
a plurality of capacitor constructions each having a first capacitor electrode over a substrate, a capacitor dielectric layer over the first electrode, a second capacitor electrode over the dielectric layer, and an atomic layer deposited insulative barrier layer to oxygen diffusion between the first electrode and the dielectric layer and/or between the dielectric layer and the second electrode, the barrier layer having a thickness of less than 10 Angstroms and the dielectric layer and/or the second electrode comprising oxygen that is diffusable into the first electrode absent the barrier layer.

41. (withdrawn--currently amended) The array of claim 40 wherein the second capacitor electrode comprises RuO_x ~~barrier layer has a thickness of less than about 12 Angstroms.~~

42. (withdrawn) The array of claim 40 wherein the barrier layer comprises Al₂O₃.

43. (withdrawn) The array of claim 40 wherein the barrier layer exhibits a K factor of greater than about 7 at 20° C.

44. (withdrawn) The array of claim 40 wherein the barrier layer comprises a chemisorption product of first and second substantially saturated precursor monolayers.

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45. (withdrawn--currently amended) A plurality of memory dice, each die comprising:

a section of a monocrystalline semiconductor wafer; and

a capacitor construction comprising a first capacitor electrode over the wafer, a capacitor dielectric layer over the first electrode, a second capacitor electrode over the dielectric layer, and an atomic layer deposited insulative barrier layer to oxygen diffusion between the first electrode and the dielectric layer and/or between the dielectric layer and the second electrode, the barrier layer having a thickness of less than 10 Angstroms and the dielectric layer and/or the second electrode comprising oxygen that is diffusable into the first electrode absent the barrier layer.

46. (withdrawn--currently amended) The dice of claim 45 wherein the second capacitor electrode comprises RuO_x ~~barrier layer has a thickness of less than about 12 Angstroms.~~

47. (withdrawn) The dice of claim 45 wherein the barrier layer comprises Al₂O₃.

48. (withdrawn) The dice of claim 45 wherein the barrier layer exhibits a K factor of greater than about 7 at 20° C.

49. (withdrawn) The dice of claim 45 wherein the barrier layer comprises a chemisorption product of first and second substantially saturated precursor monolayers.

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50. (withdrawn--currently amended) The array of claim ~~[[44]]~~ 40 wherein the barrier layer has a thickness of less than about 6 Angstroms ~~first and second precursors are different.~~

51. (withdrawn--currently amended) The dice of claim ~~[[49]]~~ 45 wherein the barrier layer has a thickness of less than about 6 Angstroms ~~first and second precursors are different.~~

52. (currently amended) The construction of claim 36 wherein the barrier layer has a thickness of less than about 6 Angstroms ~~first and second precursors are different.~~

53. (withdrawn) The construction of claim 32 wherein the barrier layer is between the dielectric layer and the first electrode.

54. (previously presented) The construction of claim 36 wherein the dielectric layer is over the barrier layer.

55. (withdrawn) The array of claim 40 wherein the barrier layer is between the dielectric layer and the first electrode.

56. (withdrawn) The dice of claim 45 wherein the barrier layer is between the dielectric layer and the first electrode.